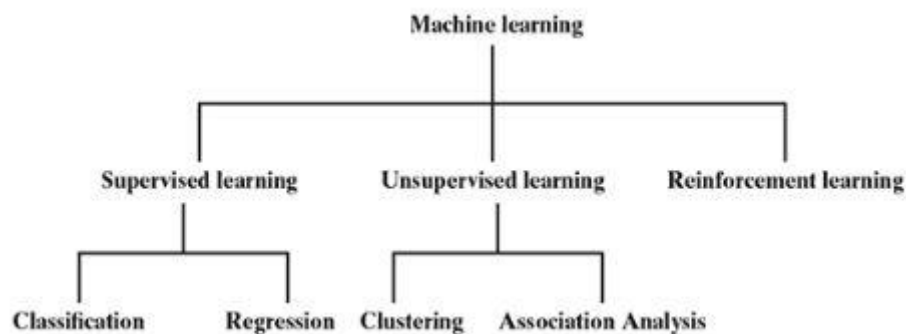


Supervised Learning



We have seen about types of ML algorithms. Now it's time to dive deep.

Let's see about supervised learning and its types. Just for the reminder, supervised learning is a type of machine learning where the algorithm is trained on a labelled dataset, consisting of input-output pairs. Each input data point is associated with a corresponding target output. The goal is to learn a mapping function from input to output by minimizing a loss or error. During training, the model adjusts its parameters iteratively through optimization algorithms. The trained model can make predictions or classify new, unseen data based on the learned patterns from the training dataset.

Consider two examples, In first task We have task to predict the price of houses and the second task is to say predicting whether a tumour is malignant or benign. Are these two problems same in nature? The answer is 'no'. In first example we are trying to predict an absolute value and not a class whereas in the other case we are trying to predict which category or class and Here regression and classification classified.

Regression:

In technical terms, regression in machine learning refers to a statistical method used to predict the relationship between independent variables and a continuous dependent variable. It helps to understand how the value of the dependent variable changes when one or more independent variables are altered.

Simple explanation:-

- A simple way to understand regression is by thinking about predicting things like the price of a house based on factors like its size, location, and number of bedrooms.
- Imagine you have a bunch of data on different houses: their sizes, locations, and prices.
- Regression helps you find a pattern in this data so that when you see a new house with similar features, you can predict its price more accurately.
- It's like figuring out a rule or formula to guess how much a house might cost based on what you know about other houses.

Classification

Classification refers to the task of categorizing input data into predefined classes or categories based on its features. It involves training a model to learn patterns and relationships in the data, allowing it to make predictions about the class label of new, unseen instances.

Simple definition:

Classification in machine learning is like sorting things into different groups based on their similarities. For example, it's like sorting fruits into baskets - putting all the apples in one basket, all the bananas in another, and so on.